UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2009*.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.
  4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-12* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  a)☐ All   b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date *5/21/09*.
4)☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, see pages 5-6 of remarks, filed May 13, 2009, with

respect to the 35 USC 101 rejection of claims 1, 3, and 12 have been fully considered

but are not persuasive. The Examiner maintains that the claims do not satisfy the

transformation requirements, as there is no depiction of a physical object or substance

input. The argument that the bandpass filter is a machine is also not accepted, as it is

well known in the art that a bandpass filter can be purely software (for software

implementations of bandpass filters, refer to US 20040179738, paragraphs 196 and

197, US 6839152, col. 5, lines 15-25, and US 5887075, col. 4, lines 10-20). Amendment

to include a specific machine such as a processor or amendment to otherwise indicate

the bandpass filter is limited to a hardware implementation is required.

2.   Applicant's arguments with respect to the 35 USC 103 Rejection of claims 1, 3,

and 12, filed May 13, 2009, have been fully considered but they are not persuasive.

3.   Regarding claims 1, 3, and 12:

        a.   The "film grain sample" as claimed is interpreted by the Examiner as the

        "base image" in the Garrido reference. While this base image contains film grain,

        and therefore the Examiner feels this can be interpreted as a "film grain sample",

        the image is not only film grain. The input image is composed of the image with

        film grain and other forms of noise ([0054], [0131], [0147]). Therefore, even when

the noise is removed, the film grain image, which is composed of the image with

film grain and other forms of noise, still remains an image, just without the noise.

Therefore, eliminating the noise and/or film grain from the film grain sample still

leaves an image to transform.

b.   In response to arguments that the Garrido reference would have no

reason to automatically model the film grain pattern, because it is removed, the

Examiner disagrees. In order to remove something, the system would have to

have an understanding of what the film grain pattern looks like, it would have to

know basic film grain characteristics. This would have to occur through some

form of modeling. Otherwise, indeed the system would remove all of the image

instead of just the noise. Therefore, there is some form of modeling occurring.

4.   All other claims are argued by dependency and therefore are addressed by the

above response.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   **Claims 1, 3, and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Garrido et al. (US 6728317 B1).

Regarding claims 1 and 12, Garrido et al. disclose a method comprising the steps of:

transforming a set of film grain samples to the frequency domain (DCT transform,

[0186]-[0195]); storing each set of coefficients resulting from such transform (DCT

coefficients, [0195]), the coefficients forming a pattern (patterns include film grain,

[0147]; horizontal texture, [0196]); analyzing the pattern created by the transform

coefficients (adaptive filtering eliminates patterns that are visually insignificant, [0147]);

and estimating the cut frequencies of a 2D band-pass filter that can effectively simulate

the pattern of transform coefficients by filtering random noise in a frequency domain

(band pass filter eliminates spatial frequencies exceeding a target content detail level,

adaptive filtering eliminates patterns that are visually insignificant, patterns include film

grain, [0146] - [0147]).

Garrido et al. do not explicitly disclose "a method for automatically modeling film grain

patterns", however because Garrido et al. disclose eliminating spatial frequencies

exceeding automatically derived target content detail level, and that adaptive filtering

eliminates patterns that are visually insignificant, wherein patterns include film grain

([0146] - [0147]), it would be obvious at the time of the invention to one of ordinary skill

in the art that a form of automatic modeling is taking place. Though Garrido et al. do not

explicitly use the term "cut frequencies", because the bandpass filter is eliminating

frequencies outside of the target range, it would be obvious at the time of the invention to one of ordinary skill in the art that this indicates the cut frequencies of the filter. Also, regarding claim 12, though Garrido et al. do not explicitly disclose "receiving film grain samples", as Garrido et al. disclose receiving base images (abstract), and images have film grain noise ([0054], [0131], [0147]), it would have been obvious at the time of the invention to one of ordinary skill in the art to interpret the input images as analogous to film grain samples.

Regarding claim 3, Garrido et al. disclose the method according to claim 1, and further disclose the film grain samples are processed in blocks of N.times.N pixels (figure 1b, parts 1115, 1135, 1165, 1175; [0058]).

7.   **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Garrido et al. (US 6728317 B1) as applied to claim 1, further in view of Visharam et al. (US 20040006575 A1).

Regarding claim 2, Garrido et al. disclose the method according to claim 1. Garrido et al. do not disclose the step of transmitting at least one cut frequency in a Supplemental Enhancement Information message.

Visharam et al. teach transmitting supplemental information in an MPEG environment with SEI messages ([0015]; [0047]; [0171] - [0179]).

The Vishram et al. reference has a valid date, as it claims priority back to 2002, and these applications contain the relevant information regarding SEI messages cited in the 2004 publication. It would have been obvious at the time of the invention to one of ordinary skill in the art to use SEI messages including the cut frequencies with the invention of Garrido et al., as SEI messages are well known in the art and are a convenient way to provide additional information about the media files.

8.   **Claims 4 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Garrido et al. (US 6728317 B1) as applied to claim 3, further in view of Engeldrum et al. (US 2002/0003903 A1) further in view of Ohnishi et al. (US 6327391 B1).

Regarding claims 4 and 8 Garrido et al. disclose the method according to claim 3.

Regarding claim 4, Garrido et al. do not disclose the step of analyzing the pattern created by the transform coefficients further comprises the steps of: computing a mean block of NxN transform coefficients by averaging the transform coefficients from all the stored blocks; defining horizontal and vertical mean vectors of N components each by averaging the mean block of NxN coefficients along rows and columns, respectively, of each transformed block; representing the horizontal and vertical mean vectors as separate curves; and establishing cut frequencies from mean vectors.

Engeldrum et al. teach computing a mean block of NxN transform coefficients by averaging the transform coefficients from all the stored blocks (*cosine transform is used to process 8x8 blocks, mean coefficient value found for each block, [0205]*); defining horizontal and vertical mean vectors of N components each by averaging the mean block of NxN coefficients along rows and columns, respectively, of each transformed block (*mean vector vm, [0161]*); representing the horizontal and vertical mean vectors as separate curves (*collection of I/O curves, [0160]; I/O curve can be written as the linear combination of the average vector and three basis vectors, [0162]*);

It would have been obvious at the time of the invention to combine the methods of Engelrum et al. with the method of Garrido et al., because this leads to a significant compaction of data needed to describe the I/O curves (*Engeldrum et al., [0163]*).

Garrido et al. and Engeldrum et al. do not disclose establishing cut frequencies from mean vectors.

Ohnishi et al. teach establishing cut frequencies from mean vectors (*cutoff frequency changed in accordance with motion vector, col. 20, lines 5-15, the motion vector is the mean value, col. 6, lines 55-60, vectors stored in horizontal and vertical directions, col. 9, lines 60-65*).

It would have been obvious at the time of the invention to one skilled in the art to

combine the mean vectors taught by Ohnishi et al. with the method of Garrido et al. and

Engeldrum et al. because with the adaptable cutoff frequency, the block discontinuities

are less prominent (*Ohnishi et al., col. 20, lines 30-50*).

9.   **Claims 5 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Garrido et al. (US 6728317 B1) and Engeldrum et al. (US 2002/0003903 A1) and

Ohnishi et al. (US 6327391 B1) as applied to claims 4 and 8 above, further in view of

Ratakonda et al. (US 6285711 B1).

Garrido et al. and Engeldrum et al. and Ohnishi et al. disclose the method according to

claims 4 and 8.

Garrido et al. and Engeldrum et al. and Ohnishi et al. do not disclose further comprising

the step of low pass filtering at least one mean vector.

Ratakonda et al. teach the step of low pass filtering at least one mean vector

(*interpolate the column and row average vectors, can use a low-pass filter to*

interpolate, col. 8, lines 1-10).

It would have been obvious at the time of the invention to one skilled in the art to

combine the low pass filtering taught by Ratakonda et al. with the method of Garrido et

al. and Engeldrum et al. and Ohnishi et al., because the method of Ratakonda et al.

improves the accuracy of motion estimation (*Ratakonda et al., col. 2, lines 60-65*).

10.   **Claims 6, 7, 10, and 11** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Garrido et al. (US 6728317 B1) and Engeldrum et al. (US

2002/0003903 A1) and Ohnishi et al. (US 6327391 B1) as applied to claims 4 and 8

above, further in view of Steinberg et al. (US 5216556 A).

Regarding claims 6, 7, 10, and 11, Garrido et al. and Engeldrum et al. and Ohnishi et

al. disclose the method according to claims 4 and 8.

Garrido et al. and Engeldrum et al. and Ohnishi et al. do not disclose the at least one

cut frequency is established from an intersection point in the curve representing the

mean vector, and each of a low and a high cut frequency is established from a first and

second intersection points in the curve representing the mean vector.

Steinberg et al. teach in FIG. 8, where the horizontal axis represents frequency and the

vertical axis denotes magnitude, shows an example of the magnitude frequency

response of FIR 310, and the magnitude frequency response of FIR 310 is given by line

318 approximating, for example in a least squares sense, an ideal low pass filter

response depicted by line 322 with a desired cutoff frequency f_{co} given by the

intersection of lines 314 and 316, as shown in FIG. 8. (col. 6, lines 55-68)

The concept of using an intersection of curves as the cutoff frequency is well known in the art. It would have been obvious at the time of the invention to one of ordinary skill in the art to have the low and a high cut frequency is established from a first and second intersection points in the curve representing the mean vector, because this is one of a limited number of ways to determine the cut frequency, and would have been obvious to try.

Conclusion

11.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to MICHELLE ENTEZARI whose telephone number is

(571)270-5084. The examiner can normally be reached on M-Th, 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Vikkram Bali can be reached on (571)272-7415. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michelle Entezari/
Examiner, Art Unit 2624

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